CLAIMS

What is claimed is:

1. A method, comprising:

slicing a block of data into a plurality of data slices;

appending slice headers to each of the plurality of data slices; and

scheduling the plurality of data slices for transmission onto an optical switching network during fixed time slots defined on a per carrier wavelength basis.

2. The method of claim 1 wherein the block of data comprises a data stream received from another network and which is buffered at an edge node of the optical switching network.

3. The method of claim 2 wherein the slice headers each include a fragment identifier ("ID") indicating an order of each of the plurality of data slices and a data stream ID identifying the data stream from a plurality of other data streams.

4. The method of claim 3, further comprising:

transmitting the plurality of data slices onto the optical switching network as an optical burst, the optical burst including fixed length cells containing the plurality of data slices with the slice headers appended thereto.

5. The method of claim 4 wherein each of the fixed length cells includes N data slices of the plurality of data slices, where N is a whole number greater than one.

6. The method of claim 4, further comprising appending a burst header to a first one of the plurality of data slices.

7. The method of claim 3 wherein scheduling each of the plurality of data slices for transmission onto an optical switching network comprises scheduling the plurality of data slices into multiple optical bursts, the plurality of data slices to be reassembled via the slice headers.

8. The method of claim 7 wherein each of the plurality of optical bursts are transmitted on different carrier wavelengths.

9. The method of claim 8 wherein the fixed time slots are of constant length throughout the optical switching network for optical bursts transmitted on a single one of the carrier wavelengths, but vary in length between the different carrier wavelengths.

10. The method of claim 1, further comprising:

establishing optical paths through the optical network prior to scheduling the plurality of data slices for transmission, wherein establishing the optical paths and scheduling the plurality of data slices are independent of each other.

11. The method of claim 10, wherein establishing the optical paths comprises executing a Resource Reservation Protocol—Traffic Engineering ("RSVP-TE") signaling protocol, wherein the RSVP-TE signaling protocol includes a hybrid OBS network extension.

12. A machine-accessible medium that provides instructions that, if executed by a machine, will cause the machine to perform operations comprising:

slicing data blocks into data slices;

generating slice headers to append to each of the data slices; and

scheduling the data slices for transmission onto an optical switching network within optical bursts, the optical bursts formed of the fixed length optical cells.

13. The machine-accessible medium of claim 12 wherein scheduling the data slices is independent of establishing a path across the optical switching network.

14. The machine-accessible medium of claim 13, further providing instructions that, if executed by the machine, will cause the machine to perform further operations, comprising buffering data streams received from another network to generate the data blocks.

15. The machine-accessible medium of claim 14 wherein scheduling the data slices for transmission comprises scheduling the data slices from multiple ones of the data streams into one of the optical bursts based on a scheduling algorithm.

16. The machine-accessible medium of claim 14, further providing instructions that, if executed by the machine, will cause the machine to perform further operations, comprising generating fragment identifiers ("IDs") identifying an order of the data slices and data stream IDs identifying the data blocks from which the data slices were sliced, wherein each one of the slice headers includes one of the fragment IDs and one of the data stream IDs.

17. The machine-accessible medium of claim 12 wherein scheduling the data slice for transmission comprises scheduling a set number of the data slices into each of the fixed length optical cells to be transmitted on a first carrier wavelength and scheduling a different number of the data slices into each of the fixed length optical cells to be transmitted on a second carrier wavelength.

18. The machine-accessible medium of claim 12, further providing instructions that, if executed by the machine, will cause the machine to perform further operations, comprising:

generating burst headers for each of the optical bursts; and

appending one of the burst headers to a first one of the data slices in each of the optical bursts.

19. An edge node of an optical switching network, comprising:

a stream slicer to slice a data block into data slices;

a header pre-append block communicatively coupled to receive the data slices from the stream slicer and to append a slice header to each of the data slices;

a scheduler coupled to schedule the data slices into fixed length time slots; and

a burst transmit block coupled to generate on optical burst for transmission onto the optical switching network, the optical burst to include the data slices with the appended slice headers.

20. The edge node of claim 19 wherein the scheduler schedules the data slices independently of a signaling protocol used to establish paths across the optical switching network.

21. The edge node of claim 20 wherein the burst transmit block is further coupled to generate the optical burst as a series of fixed length optical cells, each of the optical cells containing a fixed number of the data slices and appended slice headers.

22. The edge node of claim 21 wherein the scheduler is further to schedule the data slices into multiple optical bursts according to a scheduling algorithm for transmission on different carrier wavelengths through the optical switching network.

23. The edge node of claim 19, further comprising a buffer communicatively coupled to the stream slicer, the buffer to receive data streams from another network and buffer the data streams as the data blocks.

24. The edge node of claim 19, wherein the header pre-append block is further coupled to generate a fragment identifier ("ID") and a data stream ID for each of the data slices, the slice header comprising the fragment ID and the stream ID.

25. A system, comprising:

an edge node to receive data streams from a first network, the edge node comprising:

a stream slicer to slice the data streams into data slices;

a header pre-append block to append a slice header to each of the data slices;

a scheduler to schedule the data slices for transmission within fixed length optical cells; and

a burst transmit block to generate optical bursts containing the fixed length optical cells, the fixed length optical cells to be transmitted during regular time slots; and

a egress node optically coupled to receive the optical bursts and to deliver the data streams to a second network; and

a plurality of switching nodes optically coupled between the edge node and the egress node to route the data streams from the edge node to the egress node.

26. The system of claim 25 wherein the scheduler schedules the data slices independently of a signaling protocol used to establish a path across the plurality of switching nodes.

27. The system of claim 26 wherein the scheduler is further to schedule the data slices from one of the data streams into multiple ones of the optical bursts according to a scheduling algorithm for transmission to the egress node, each of the optical bursts transmitted to be transmitted on a different carrier wavelength.

28. The system of claim 25 wherein the header pre-append block is further to generate a fragment identifier ("ID") and a data stream ID for each of the data slices, and wherein the slice header comprises the fragment ID and the stream ID.

29. The system of claim 28 wherein the egress node is further to reassemble the data slices of one of the data streams prior to delivering the one of the data streams to the second network, if the data slices arrive at the egress node out of order.